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sage of the modern educational world and that he would be recreant to his sense of truth if he held his peace. GRAHAM LUSK

LETTER FROM PROFESSOR ED. CLAPARÈDE

J'APPRENDs de divers côtés que "Science" a reproduit une nouvelle d'après laquelle j'aurais dû démissionner de mes fonctions à l'Université de Genève. Cette nouvelle est entièrement inexacte. La presse allemande, qui l'a d'abord propagée, m'a confondu avec un de mes cousins, professeur de droit germanique à Genève; celui-ci a en effet été suspendu provisoirement de son enseignement pour avoir, dans son cours, reproché à la population civile belge d'avoir tiré sur ses agresseurs allemands.

Au moment où ces incidents se sont produits, j'étais mobilisé, à la frontière, comme médecin d'un bataillon de montagne. J'y suis donc entièrement étranger. Mais, puisque mon nom a été prononcé, permettez-moi d'ajouter, pour éviter tout malentendu, que je ne partage aucunement la manière de voir de mon cousin, dont la mère est allemande, et qui a été lui-même élevé en Allemagne, ce qui explique suffisamment son manque d'objectivité en cette affaire. ED. CLAPARÈDE

FACULTÉ DES SCIENCES DE GENÈVE

SCIENTIFIC BOOKS

Text-book of Embryology. Vol. I. Invertebrata. By E. W. MACBRIDE, M.A., D.Sc., LL.D., F.R.S. London, Macmillan & Co. 1914. Pp. 692.

"The design of this text-book of embryology of which this is the first volume, is to associate the structural development of embryos with broad generalizations of what is known of their physiology. Attention will be drawn, for instance, to the correlation between the function of certain organs of a larva and its habit of life, and, in a more general way, between function and habit and the course of development. Reference will be made to some of the more striking results obtained by experimental embryological research. Attention will be drawn to gaps in our knowledge which indicate promising fields for research."

These words by the editor, Professor Walter

Heape, introduce a work which promises to be as useful to the embryologist as is the Cambridge Natural History to the zoologist. Two other volumes are to be included in the work, one on the "Lower Vertebrata" by Professor John Graham Kerr and one on the mammals by Mr. Richard Assheton, both announced to be in press.

The volume before us measures 692 pages and is illustrated by 468 well-executed figures. The treatment is necessarily very succinct, as will be apparent when we consider that Balfour's treatment of invertebrata in his "Comparative Embryology" of 1885 was almost equally extended, and that Korschelt and Heider devoted 1,509 pages to the same groups in 1890-93. Professor MacBride's treatment, of course, includes later investigations also. In each phylum at least one type is selected for detailed description of the entire life history, and in the larger phyla each class may be so represented. Comparative data are then discussed; the experimental embryology is then treated, in some groups at least; and in conclusion the phylogeny of the phylum is considered from the point of view of the developmental history. This method admits both of considerable detail in the treatment of the type forms, and also of succinctness in the consideration of the comparative data. It avoids the vicious habit of constructing life histories from pieces of different ontogenies, and at the same time preserves some advantages of the comparative method.

The descriptive part of Professor MacBride's book is well done, and will be most useful. Special note should be made of the adequate descriptive treatment of cell-lineage hitherto lacking in text-book form. A selected list of literature follows each chapter, and the index appears to be very full. The practical embryologist will find methods of study in many places.

In such a book very much depends on the point of view of the author. The material is so great that rigid selection has to be practised: what is to be rejected, what retained and what principles are to be emphasized? There is no doubt about the point of view of Pro-

fessor MacBride; he stands firmly by the descriptive method, and the phylogenetic point of view as fundamental. All else is secondary: "It is, therefore, of the essence of *comparative embryology* to separate the fundamental ancestral traits of development from the superficial and secondary, and this is the task that has been patiently pursued for the last thirty years." If the results are considered disappointing, this is due largely to the human failing of lack of patience; and if divergences of opinion with reference to phylogenetic problems seem irreconcilable, in what better position are the adherents of the experimental analytical school? Are not opinions equally diverse and irreconcilable there? "The real truth is that experimental embryology is an adjunct and not an alternative to comparative embryology."

As good an illustration of the author's preferred form of generalization as the book affords is contained in the following quotation:

"We are thus led to form the following conception of the past history of the lower Metazoa. A widespread and dominant race of blastula-like animals once swarmed in the primeval seas. Some of these took to a creeping life and eventually gave rise to the group of sponges; others kept to the free-swimming life and developed into planulae, and so gave rise to the Cœlenterata. Some of these planulae, by the specialization of the cilia into comblike locomotor organs, became Ctenophora; whilst the remainder adopted a fixed life and attached themselves by their aboral poles. This change occurred in the different divisions of the stock at different stages of the evolution of the internal organs of the planula ancestor, and in this way the groups of Hydrozoa, Scyphozoa and Actinozoa arose."

One is tempted to ask are such questions really the fundamental questions of comparative embryology? No one doubts the broad fact of evolution; nor can it be questioned that embryology is a strong aid to comparative anatomy and paleontology in the investigations of relationships. But the method has its limits, which seem to be surpassed in the above citation.

The experimental method in embryology is not a mere adjunct to comparative embryology of this sort. Indeed, experimental embryology has contributed very little to the phylogenetic interpretation of ontogeny, and in the very nature of things it is impossible that it should do so.

We have in fact two quite radically distinct points of view in embryology, viz.: the comparative anatomical and phylogenetic represented by Professor MacBride, and the functional analytic. Both rest, of course, upon descriptive embryology. Experimental methods are more or less applicable to both. But whereas their use for phylogenetic purposes must be limited to relatively simple purposes, such as determination of origins of parts where purely observational method fails, and can be of no service for the more general problems of phylogeny, experimental methods contribute the essential data for functional analytic problems of embryology, and are absolutely necessary for the investigation of all the more fundamental questions.

The phylogenetic and the functional analytic points of view in embryology diverge from a common basis of observation and experiment. Experimental embryology is not merely an adjunct to comparative embryology. The broadest aspects of phylogenetic embryology must forever, so far as we can see, remain matters of opinion, which can never be subjected to crucial experimental investigation. The reaction against this type of embryological research is therefore due not merely to lack of patience, but also to lack of confidence. That there remains much important work to be done of a purely descriptive character in embryology goes without saying; it is being produced all the time; but in the best works of recent years there is a notable reserve with reference to phylogenetic speculation.

Professor MacBride has selected and limited his material according to his point of view. One result is an altogether inadequate treatment of general and also experimental embryology. In this there is no lack of consistency, and it is therefore not in itself a matter for

just criticism. But certain regrettable mistakes occur in this part of the subject: for instance on page 3 it is stated that the terms oocytes and spermatocytes of the first order are applied to the germ-cells at the end of the period of growth, whereas these names are usually applied from the beginning of this period. On p. 16 the chromosome interpretation of Mendelian phenomena is given incorrectly, but is partially corrected in a footnote; on page 17 increase of "alkalinity" of the sea water is attributed to addition of butyric acid; evidently a slip. On p. 524 Morgan is credited with the discovery of inducing artificial parthenogenesis in sea urchins by treatment with hypertonic sea-water, and Loeb stated to have confirmed this result in 1910. Loeb, of course, made the original discovery in 1899. Several other similar errors occur.

Professor MacBride's volume is to be welcomed as a useful account of descriptive invertebrate embryology. But, to complete the series in which it belongs, there is a need of a volume which shall treat the cytological, functional analytic and general problems of embryology, which seem to the writer to constitute the most significant aspects of the embryological research of the last thirty years.

F. R. L.

An Introduction to the History of Medicine, with Medical Chronology, Bibliographic Data and Test Questions. By FIELDING H. GARRISON, A.B., M.D. W. B. Saunders Company. 1914. Pp. 1-763, illustrated with numerous portraits of eminent men, to which is appended an extensive bibliography covering 18 pages.

The author, in his preface, states that "the object of this book is to furnish the medical student or the busy practitioner with a definite outline of the history of medicine" But it is apparent, even on a hasty examination, that the work is capable of much wider usage and may easily be regarded as the most convenient volume of reference on the historical phases of medicine which has been issued recently in the English language. It ranks with the larger and more extensive works of Haeser

and of Neuberger, Puschmann and Pagel, though more modest in scope.

The work bears clear evidence of its author's intimate association with the best medical library of the continent and he has made free use of the extensive material in the Surgeon General's library. The volume is chiefly a biographical study of the development of modern medicine, the characters being fully portrayed or briefly mentioned as a particular phase of their career bore an impress on the period or on a certain phase of medicine. One is thus compelled to search in several places for the details of any one man, and even then he finds many only scantily given, this being in accord with the author's views of writing a history of medicine. Both the men involved and the condition of the times in which they worked united to produce the final result.

From the viewpoint of anatomy the work is especially useful. Anatomy has been given its widest application and all phases of biology bearing on the development of medicine have been discussed, with brief or extensive mention of the more eminent men who have had a part in the development of anatomy, not only as directly applied to medicine, but in the purely scientific aspects of the science. Not only is mention made of the men who have been influential in the development of anatomy, but the political conditions of the times in which they worked are discussed. Their more important discoveries are given with, in many cases, exact references to the literature where they were formally discussed; thus adding immensely to the usefulness of the volume. The titles of the more important larger works of many of the prominent anatomists of all time are given, with date and place of publication. The early writers such as Galen, Hippocrates, Fontana and others are treated with especial care and notices of their writings are accompanied by useful notes as to number of editions, translations and commentaries with a statement of which are considered the most authoritative. These notes will save the student just beginning the study of the history of anatomy many blunders and much valuable time.